Pathogenic, versatile and tunable activity of sortase, a transpeptidation machine

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Propositions:

1. Sortases are a group of enzymes with two sides to them, as they can be used as a target for new antibiotic strategies and as a tool for biotechnological applications (this thesis).

2. Indole-based compounds can aid in the exploration of sortase inhibitors, which in turn can lead to the development of new anti-infective agents against *S. pyogenes* (this thesis).

3. Protein engineering techniques can improve sortase's properties such as activity, stability, production and selectivity (this thesis).

4. Consensus design can be applied to identify specific residues in the $SaSrtA_{\Delta N59}$ WT sequence that do not only have an impact on thermal stability, but also on enzymatic activity, and even on Ca^{2+}-dependence (this thesis).

5. The cellular high-throughput encapsulation solubilization and screening (CHESS) method could allow for a rapid selection of improved SaSrtA variants, thus opening the door to novel sortagging applications (this thesis).

6. An accurate experiment requires measurement of nine control samples and one actual sample.

7. It is often better to spend time on "sharpening the axe" by reading more papers than wasting time on repeating poorly planned experiments.

8. Teaming up with other researchers is a great way to conduct complex research. Nevertheless, one should be prepared for possible challenges.

9. Science consists of a great deal of waiting. Waiting for the measurement to finish, for cells to grow, for equipment to be available, for some reagents to arrive. In other words, working in science requires a lot of patience.

10. Achieving success is much less of a skill than rising up from a fall.